Defense Information Infrastructure (DII)

Common Operating Environment (COE)

Statement of Functionality (SOF)
for the
Imagery Application Program Interface (API) (MAIMG) Segment

20 July 1999

Prepared for:
Space and Naval Warfare Systems Command
Environmental Systems Program Office
(SPAWAR PMW-185)

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Table of Contents

List of Figures

1 SCOPE

1.1 Identification

This document describes the functionality of the Imagery Application Program Interface (API) (MAIMG) segment of the Navy Integrated Tactical Environmental Subsystem (NITES). The MAIMG segment provides APIs for the storage and retrieval of Imagery Products.

1.2 System Overview

TEDS is the Meteorological and Oceanographic (METOC) Database for the NITES system. It is a DII COE shared database, with separate segments for different types of data and different functionalities. For each data type, there is a Database segment that provides the database schema and "static" database tables such as the Master Station Library in the LLT Observation database. There is also an Application Program Interface (API) segment that provides programming interfaces to the database. The API segments provide functionality for programs to cause data to be ingested into the database, to get a catalog of data in the database, to retrieve data by query or by individual item ID, to delete data from the database, etc. Underlying all of TEDS is a Commercial Off-the-Shelf (COTS) Relational Database Management System (RDBMS). This is currently Informix v7.2x, but could be any RDBMS.

1.3 Document Overview

Section 2 provides a more detailed overview of TEDS, while Section 3 contains more detail concerning the specific functionality provided by the MAIMG segment.

2 TEDS FUNCTIONALITY OVERVIEW

The software described in this document forms a portion of the TEDS component of NITES. On 29 October 1996, the Oceanographer of the Navy issued a Program Policy statement in letter 3140 Serial 961/6U570953, modifying the Program by calling for five seamless software versions that are DII COE compliant, preferably to level 5.

The five versions are:

- NITES Version I The local data fusion center and principal METOC analysis and forecast system

- NITES Version II The subsystem on the Joint Maritime Command Information System (JMCIS) or Global Command and Control System (GCCS) (NITES/Joint METOC Segment (JMS))

- NITES Version III The unclassified aviation forecast, briefing, and display subsystem tailored to Naval METOC shore activities (currently satisfied by the Meteorological Integrated Data Display System (MIDDS))

- NITES Version IV The Portable subsystem composed of independent Personal Computers (PCs)/workstations and modules for forecaster, satellite, communications, and Integrated Command, Control, Communications, Computer, and Intelligence Surveillance Reconnaissance (IC4ISR) functions (currently the Interim Mobile Oceanographic Support System (IMOSS))

- NITES Version V Foreign Military Sales (currently satisfied by the Allied Environmental Support System (AESS))

NITES I acquires and assimilates various METOC data for use by US Navy and Marine Corps weather forecasters and tactical planners. NITES I provides these users with METOC data, products, and applications necessary to support the warfighter in tactical operations and decision making. NITES I provides METOC data and products to NITES I and II applications, as well as other systems requiring METOC data, in a heterogeneous, networked computing environment.

The NITES I Concept of Operations and system architecture require that the METOC Database be distributed both in terms of application access to METOC data and products and in terms of physical location of the data repositories. The organizational structure of the database is influenced by these requirements, and the components of this distributed database are described below.

In accordance with DII COE database concepts, the METOC Database is composed of six DII COE-compliant *shared database* segments. Associated with each shared database segment is an Application Program Interface (API) segment. The segments are arranged by data type as follows:

Data Type	Data Segment	API Segment
Grid Fields	MDGRID	MAGRID
LLT Observations	MDLLT	MALLT
Textual Observations and Bulletins	MDTXT	MATXT
Remotely Sensed Data	MDREM	MAREM
Imagery	MDIMG	MAIMG
Climatology Data	Segments named by data type. To date, only DBDB-V segments (MDDBV and MADBV) have been released.	

A typical client-server installation is depicted in Figure 2-1 on the next page. This shows the shared database segments residing on a DII COE SHADE database server, with a NITES I or II client machine hosting the API segments. Communication between API segments and shared database segments is accomplished over the network using American National Standards Institute (ANSI)-standard Structured Query Language (SQL).
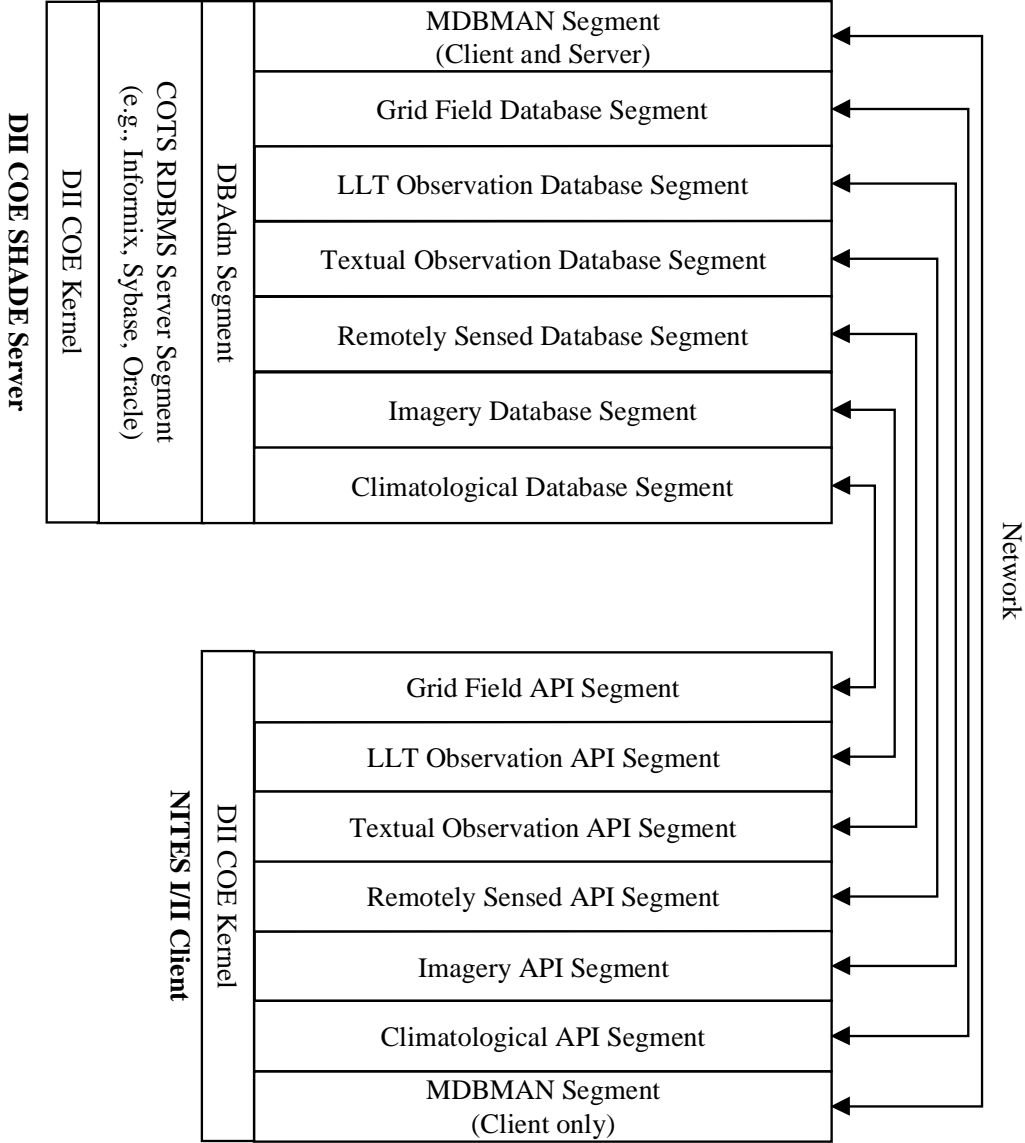
DII COE SHADE Server

DII COE Kernel	COTS RDBMS Server Segment (e.g., Informix, Sybase, Oracle)	DBAdm Segment	MDBMAN Segment (Client and Server)
			Grid Field Database Segment
			LLT Observation Database Segment
			Textual Observation Database Segment
			Remotely Sensed Database Segment
			Imagery Database Segment
			Climatological Database Segment

NITES I/II Client

DII COE Kernel	Grid Field API Segment
	LLT Observation API Segment
	Textual Observation API Segment
	Remotely Sensed API Segment
	Imagery API Segment
	Climatological API Segment
	MDBMAN Segment (Client only)

Figure 2-1. NITES METOC Database Conceptual Organization

3 MAIMG SEGMENT FUNCTIONALITY

The APIs in the MAIMG segment deal with imagery products. Imagery products can be associated with a specific geographic point/area, as well as time. A number of different image formats are supported; they are NITF, MIF, GIF, TIFF, BMP, JPEG, XWD, XBM, PBM, MPEG, and Other.

The Imagery API segment provides interfaces to:

- Establish connection to the TESS(NC) MDIMG Database (MAIMGConnect, MAIMGRemoteConnect)

- Set the current connection (MAIMGSetConnection)

- Ingest an Image into the database (MAIMGIngest)

- Retrieve a catalog listing of Imagery meeting specified criteria from the database (MAIMGCatalog)

- Retrieve selected Imagery data from the database (MAIMGGetByQuery)

- Retrieve a single Image from the database (MAIMGGetByID)

- Update a single Image record in the database (MAIMGUpdateByID)

- Delete a selected Image from the database (MAIMGDeleteByID)

- Retrieve a listing of Type and SubType information (MAIMGGetTypesInfo)

- Free the linked lists returned by MAIMGCatalog and MAIMGGetByQuery (MAIMGFreeLL)

- Disconnect from the database (MAIMGDisconnect, MAIMGRemoteDisconnect).